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BEFORE
THE SENATE COMMERCE SUBCOMMITTEE
ON COMMUNICATIONS

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Introduction

Mr. Chairman, I appreciate the opportunity to appear before your Committee to discuss Section 706. I plan to make three points in my testimony:

There is an investment problem in America with the respect to deployment of high-speed, interactive, broadband capability, especially in the local access portion of the network.

Section 706 was specifically designed to deal with this problem.

A solution to this problem can be developed that will not sacrifice the essential interests of any of the competing carriers or the public interest, but rather will create a more conducive climate for the rapid deployment of high-speed broadband capability to all Americans.

I should also say that I am not here today to promote fiber optic technology as the sole solution to the investment problem. It is not.

There are a multitude of different technologies and architectures that can be deployed to provide high-speed, interactive, broadband capability in the local access portion of the network. These solutions can be fiber-based, copper-based, wireless, or some combination of all of these.

There is simply no one technology or architecture solution to fit all circumstances. The carrier should determine what technology to deploy based upon expected service demand, cost, typology, and other factors.

While regulation does play a role in the carrier's investment decision, this role should be reduced to the level necessary only to ensure that competitive markets prevail.

The Investment Problem

A strange thing happened on the road to implementing the Telecom Act -- investment in high-speed, interactive broadband capability by incumbent local exchange carriers ("ILECs") dropped. What is stunning is that this decline followed a dramatic twelve year run in which investment by ILECs in such capability grew by an average annual compound rate of 35%!

Let me be more specific. In 1996, the first year of the Telecom Act, ILEC investment in optical fiber declined by 6.4%. This decline was extremely sharp in light of the fact that ILEC average deployment grew by 35% annually from 1983 to 1995.

What is more interesting is to compare this rather negative experience following the passage of the Telecom Act with the very different positive experiences after the divestiture of AT&T and the enactment of the Cable Act. With both AT&T divestiture and Cable Act enactment, the incumbent carriers responded to the new conditions of enhanced competition by rapidly investing in fiber optics to gain strategic advantage. Let me explain my point with a little history.

Fiber optic technology was invented by Corning Incorporated in 1970. During the decade of the 1970's, the technology pretty much remained "on the shelf." AT&T was a vertically integrated monopoly at the time and had little interest in the deployment of new fiber optic technology. Frankly, AT&T was acting quite rationally at the time. Why would it invest in new technology which would merely obsolete its embedded base of copper and microwave facilities? It owned the market.

But the divestiture of AT&T introduced a whole new dynamic into the market. MCI, Sprint, and other new competitors were given a chance to compete against AT&T in long distance service. This new competition drove the deployment of fiber optic technology. In 1985, the first year of the divestiture, deployment of optical fiber in the long distance portion of the network increased by 82%.

More importantly, the incumbent, AT&T, changed its strategy. In the mid-1980's, it took a multibillion dollar write down on its copper and microwave facilities to advance the deployment of fiber optics. The market worked.

The passage of the Cable Act in 1992 witnessed a similar experience. The Cable Act introduced a whole new level of competition in the delivery of entertainment video by breaking the stranglehold that vertically integrated cable operators had over programming. Section 628 of the new Act essentially required that vertically integrated cable operators make their programming available to competitors, primarily DBS providers, on reasonable terms and conditions. This made DBS providers a serious competitive threat to the incumbent cable industry.

The result of this new reality, as well as other factors like the threat of Video Dialtone, gave incumbent operators the incentive to deploy a wholly new architecture known as hybrid fiber coax.

This new architecture, which made significant use of optical fiber, gave incumbent cable operators a way to compete effectively against DBS providers. With this new fiber-based architecture, incumbent cable operators could substantially increase channel capacity, improve their picture quality, enhance their reliability, and position themselves to provide new services like high-speed data and telephony in the future.

As a result, deployment of fiber optics by the CATV industry increased by a whopping 149% in 1993, the first year of the Cable Act implementation.

Compare these two previous experiences with the recent Telecom Act experience. Divestiture saw an 82% increase in fiber investment by the incumbent industry. The Cable Act saw a 149% increase in fiber investment by the incumbent. But, the Telecom Act saw 6.4% decrease in fiber investment by the ILECs. Clearly, something went awry.

Fortunately, the other segments of the fiber optics market, including the competitive local exchange carriers ("CLECs"), the inter-exchange carriers ("IXCs"), the CATV industry, and the utilities showed strong growth after passage of the Act. This compensated to some degree for the decline in the ILEC sector. Certainly, this growth is attributable in a positive way to the Telecom Act passage, particularly with respect to IXCs, CLECs, and the utilities. But these sectors remain relatively small compared to the ILECs.

Admittedly, these data are limited to the experience of the fiber optics industry. And certainly, the success of the Telecom Act should not be determined by the fate of the fiber optics industry. But, these data provide a strong indicator that the rapid deployment of high-speed, advanced, broadband capability, by both incumbents and new entrants, expected from the Act's passage hasn't occurred. Two years after enactment, the incumbents haven't made their move.

This conclusion is supported by analysis of ILEC investment published recently

by the Economic Strategy Institute ("ESI"). At a March 3 conference on broadband infrastructure, ESI released an analysis which concluded that:

"Total [ILEC] investment in maintenance
and modernization has been negative."

Certainly, this conclusion could not be drawn if the ILECs were rapidly deploying high-speed, broadband capability. Policy makers should be concerned about the reluctance of the ILECs to invest in high-speed, broadband capability because they are such a huge investor in our nation's telecom infrastructure. They are the biggest investor, at about $20 billion annually.

This doesn't mean they should be given preferential regulatory treatment, but it does mean that the future of our infrastructure will be determined in large part by how much they decide to invest, how fast they decide to deploy new infrastructure, and in what technology they decide to deploy. We ignore them at our own peril.

Reason For Investment Problem

So why does there seem to be a reluctance on the part of ILECs to expand rapidly their investment in high-speed broadband capability? Frankly, I think the answer is very complicated. It is slightly different for each carrier. But, one thing is clear, this reluctance is not due to the unavailability of technology solutions.

The ILECs face a multitude of choices in deciding which technology to deploy to provide high-speed, broadband local access. Within the three basic technology choices: fiber-based, copper-based and wireless, there are at least thirty different architectures. I have included in my testimony a paper (Attachment 1) authored by Paul Shumate from Bellcore which highlights all the different technology and architectural choices for high-speed, broadband local access. It is truly an alphabet soup ranging from ADSL to HFC to FTTH.

Corning believes that none of these technologies or architectures will prove to be dominant. Rather, carriers will use whatever combination of technologies and architectures to most efficiently meet their needs.

The point is, the range of technology and architectural choices provides ILECs with many alternatives. Responding to market forces, they should be able to select whichever mix of cost and performance they believe best meets their customers' needs.

If the absence of technology doesn't explain the reluctance of the ILECs to invest in high-speed, interactive, broadband capability, what does? We think the answer is a combination of market uncertainty and regulatory uncertainty.

There are two principal forms of market uncertainty that the ILECs face. First, there is an uncertainty over what types of high-speed broadband services subscribers will purchase and at what price. ILECs know that subscribers will buy one-way entertainment video (i.e., CATV service) and 2-way voice (i.e., local telephony). But, will customers demand full interactive broadband capability so they can do video conferencing, video telephony, or switched video entertainment? Or, will they be satisfied with a lesser level of service but one which is improved over that which is available today -- perhaps higher-speed data?

It is important to note that this type of market uncertainty over consumer demand faces all carriers. It is not unique to ILECs.

Second, ILECs face uncertainty about their competitive threat. As noted earlier, competition drove AT&T in the 1980s and incumbent CATV operators in the 1990's to invest in broadband fiber optic capability. But as you know, competition especially in the residential telephone market, has been evolving more slowly than policymakers probably thought it would when they crafted the Telecom Act. Without competition, incumbents do not face a strategic imperative to act.

Finally, ILECs face a regulatory uncertainty. The implementation of the Telecom Act is now caught in the web of litigation. The Supreme Court will ultimately have to render a judgment on the constitutionality of some of the basic elements of the Act. The outcome of these decisions will affect significantly the prospect for earning a return on new investment by the ILECs.

This regulatory uncertainty also affects potential ILEC competitors for local service. They too are uncertain about the rules that will govern market behavior.

Obviously, government can't do anything about the market uncertainties. But, it can do something about the regulatory uncertainty. Section 706 was designed to give the government authority to act.

There is an interesting similarity between the uncertainty in the telecom market over the Act's implementation and the uncertainty in financial markets due to the budget crisis. During the period when the budget seemed to be out of control, real interest rates in the United States were substantially higher than those in the rest of the world.

But now, with the government having removed the uncertainty associated with the budget deficit by agreeing on the Balanced Budget Act, interest rates have dropped dramatically. This has created greater certainty in the financial markets and no doubt has contributed significantly to the records on Wall Street.

Perhaps, by government taking action to create certainty in telecom regulation, we can have a similar effect in the telecom market.

Section 706 -- The Clean-up Authority

Thanks to your insight, Mr. Chairman, the Congress had the wisdom to enact Section 706. As you know better than anyone, this provision was specifically enacted to give the FCC authority to remove barriers and adopt pro-competitive measures to promote infrastructure investment should the Act fail to deliver on its promise. You foresaw that the Telecom Act was becoming so complicated and regulatory that it could in fact discourage, rather than encourage, infrastructure investment. Your concerns turned out to be prescient.

Let's go back to the principal objective of the Act itself. It states unambiguously that one of the Act's two objectives is to "encourage the rapid deployment of new telecommunications technologies."

This broad objective in the Act was reinforced in Section 706 by directing the FCC and the state Public Utility Commissions to "...encourage the deployment on a reasonable and timely fashion of advanced telecommunications capability to all Americans..."

The accelerated deployment of "advanced telecom capability" necessarily requires the investment by ILECs and other carriers in high-speed, interactive,

broadband technology. The definition of such capability makes this clear. It states that:
"...advanced telecommunications capability is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecom capability that enables users to originate and receive high-quality voice, data, graphics and video telecom using any technology."

Although this definition is expressly technology neutral, the description of the capability as high-speed, broadband, two way, and capable of transmitting information in all of its forms bi- directionally makes "Section 706 capability" a substantial transmission capability, not limited service capability.

There is no question that Section 706 capability cannot be provided over the existing ILEC network. A telecom system is only as good as its weakest link. The copper wire that currently connects to 99% of businesses and homes in America is the ILEC system's weakest link. It is simply incapable of providing Section 706 capability without being enhanced electronically at considerable cost. This is a fact of life.

So it is very clear that to provide Section 706 capability new investment must be made. As indicated earlier, the technology and architectural choices are manifold. However, they all require a substantial investment.

This applies to all the options open to the ILECs. Even the much promoted ADSL -- asynchronous subscriber digital loop, a compression technology that enhances the existing copper wire to provide a higher speed service -- requires significant investment.

To make ADSL available to a subscriber, a data terminal and splitter must be installed by the ILEC in the switch and a modem on the customer's premise. We estimate that the cost of ADSL today is over $1000 per subscriber, including the cost of labor for installation. This assumes that the existing copper loop does not have to be reconditioned. If it does, the total cost of labor goes up substantially. The cost of the equipment will fall somewhat as increasing volumes are deployed.

It is also important to note that even if an investment is made in this new ADSL capability, such capability may not necessarily meet the definition provided for in Section 706. The supported data rate of the service is a function of loop length, condition of the copper loop, the number of subscribers using the service in the same " binder group," and the electronics currently installed on the loop.

Because of these uncertainties, ADSL may not necessarily meet the Section 706 definition. It may not be high-speed, broadband, or enable users to send information in all of its forms bi-directionally.

I have attached to my testimony (Attachment 2) an assessment of Section 706 capability compared to ADSL. It provides a useful comparison.

Action Necessary

So it is clear that we have an investment problem and, fortunately, Congress has given the FCC the authority in Section 706 to address it. The question now is whether Section 706 can be implemented in a fashion so as to address the ILEC investment

problem without violating the essential features of the Act, the interconnection provisions in Section 251, and the long distance service restriction in Section 271?

We think it can. But to do so will require cooperation among all of the carriers.

We believe that it is in everybody's interest to demonstrate that the industry can work together. Let's face it, there is a lot of doubt in Washington about whether the Act has worked. Section 706 may give us all an opportunity to demonstrate that it has.

Such a solution would isolate "Section 706 data capability" for different regulatory treatment than that provided for voice, video, or wireless service. The notion that all "bits" are the same in the digital world, doesn't apply to telecom law and regulation. The law treats ILEC-provided voice bits, CLEC-provided voice bits, wireless voice-bits, broadcast video bits, and CATV-provided bits differently.

This different treatment is due not to technology, but rather to economic reality. Regulation is only necessary in situations where competition is inhibited by the market power of a particular class of carrier. It has nothing to do with technology.

Fortunately, in the high-speed capability defined by Section 706 no carrier is dominant. No particular carrier has an edge. Any carrier who wants to provide this capability must make a substantial new investment. So the conditions of competition for Section 706 data capability are clearly different than those that exist for voice or video today.

Our proposal is to cordon off "Section 706 data capability" for different regulatory treatment. This regulatory treatment would be guided by the following principles:

User Choice: subscribers to Section 706 data capability must be able to shift freely between providers like they do today with long distance service.

User-Price De-regulation: the price for Section 706 data capability should be de-regulated with carriers free to charge subscribers whatever the market will bear.

Reduced Regulation for All Carriers: all carrier classes should be able to provide Section 706 capability and propose the elimination of regulatory barriers that inhibits its deployment (e.g., the franchise fee that the CATV industry currently pay on the provision of high-speed cable service might be eliminated should they decide to offer a Section 706 data capability).

Reasonable Return on New Investment: regulation which inhibits the ability of any class of carrier to earn a return on the investment necessary to provide Section 706 data capability should be amended to allow that class of carrier to earn a reasonable return.

Ease of Entry: where a certain class of carrier has control over bottleneck common carrier facilities (e.g., ILEC control over the local loop), they should be required to make those facilities accessible to other carriers.

Reduction of Barriers that Impede Efficiency: where a class of carriers can demonstrate that certain regulations impede their efficiency, these regulations should be modified to allow those carriers to gain efficiencies and maintain operational control over the delivery of Section 706 data capability.

Phased Implementation: policymakers may be somewhat reluctant to pursue this new approach for fear that its consequences are unknown. If this is the case, phased implementation -- perhaps allowing incumbent carriers initially to provide Section 706 data capability to 10% of its subscribers with phased expansion thereafter -- should be

pursued.

This new systemic approach is not designed to put any carrier at an advantage over another. Rather, it is intended to create a “Silicon Valley” experience for high-speed broadband deployment. It would enable the nation to build its strength, the ability of the private sector to compete and innovate with a minimal level of government intervention.

Conclusion

Hopefully, these ideas will be received by the Committee and the telecom community generally in the spirit in which they are offered -- a goodwill effort to get the ball rolling. We remain confident that together we can find a solution to this problem and move forward while the litigation over the Telecom Act proceeds on its current course.

The goal here is not to create an advantage for anyone. Rather, its intended to create an opportunity for everyone.

See Chapter 9 (pp. 264-299) of The Silent War: Inside the Global Business Battles Shaping America’s Future by Ira Magaziner and Mark Patinkin for a full description of the history.

Section 628 (b) [47 U.S.C. 548] states:

“It shall be unlawful for a cable operator, a satellite cable programming vendor in which

a cable operator has an attributable interest, or a satellite broadcast programming vendor

to engage in unfair methods of competition or unfair or deceptive acts or practices, the

purpose or effect of which is to hinder significantly or to prevent any multi-channel video

programming distributor from providing satellite cable programming or satellite broadcast

programming to subscribers or consumers.”

The CATV sector is also very large. In 1997, the CATV industry deployed more optical fiber than any other sector including the ILEC’s.

See Is America Investing in Communications Networks? by Erik R. Olbeter, presented at ESI Conference, America’s Broadband Future, March 3, 1998.

ESI also concludes that the definitive investment behavior of the ILECs is difficult to establish from the public data that is available.

P.L. No 104-104, 11 stat. 56 (1996).

Section 706 (a.)

Section 706 (c) (1)

ADSL is one variety of a family of xDSL capabilities. The various types of xDSL

technologies vary by data rate and effective distance. ADSL provides 1.5 Mbps downstream and 16 kbps upstream at 18,000 feet, over a perfectly conditioned pair of copper wires. Under optimal conditions (inside 9,000 feet on high quality lines) and perfectly conditioned copper, this improves to 9 Mbps down and 640 kbps up. High data rate Digital Subscriber Line (HDSL) uses two lines and achieves rates of 1.544 Mbps, equivalent to a T1 trunk. Single line DSL (SDSL) is similar to HDSL but uses only one line. SDSL can achieve the same throughput as HDSL with half the lines, but at shorter distances- 10,000 feet compared to 12,000 feet for HDSL. Very high data rate Digital Subscriber Line (VDSL) is used for the very short distances, and can achieve speeds of 13 Mbps under 4,000 feet and up to 52 Mbps at 1,000 feet. See generally ADSL Forum. General Introduction to Copper Access Technologies, http://www.adsl.com/general_tutorial.html. ADSL Forum, ADSL Tutorial, http://www.adsl.com/adsl_tutorial.html.